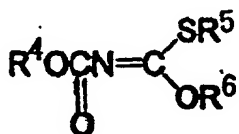


[illegible]

In re application of

9. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which: R<sup>4</sup> represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group; R<sup>5</sup> represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group, the method comprising the steps of:

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing an intermediate represented by the following general formula (8); and

preparing the isothiocyanatoformic acid ester derivative from the intermediate:



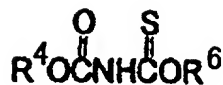
General formula (5)



General formula (6)



General formula (7)

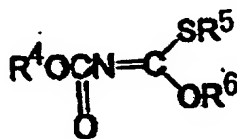


General formula (8)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom.

10. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which: R<sup>4</sup> represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group; R<sup>5</sup> represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group, the method comprising the steps of:

preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and

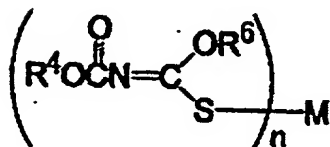
preparing the isothiocyanatoformic acid ester derivative from the second intermediate:



General formula (8)



General formula (9)

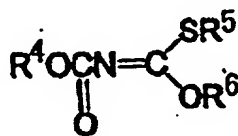


General formula (10)

wherein, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom.

11. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)

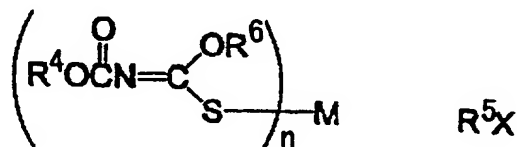


in which:  $R^4$  represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group;  $R^5$  represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group;

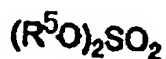
and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group, the method comprising the steps of:

preparing an intermediate represented by the following general formula (10); and

reacting the intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



General formula (10) General formula (11)

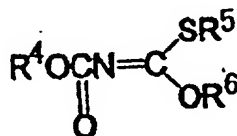


General formula (12)

wherein, in the general formula (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X represents a halogen atom or SO<sub>3</sub>Ar, and Ar represents a substituted or non-substituted aryl group.

12. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which:  $\text{R}^4$  represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group;  $\text{R}^5$  represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and  $\text{R}^6$  represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group, the method comprising the steps of:

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and

preparing the isothiocyanatoformic acid ester derivative from the second intermediate:



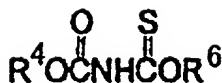
General formula (5)



General formula (6)



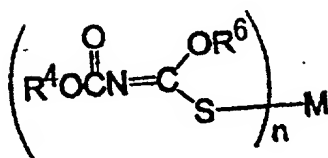
General formula (7)



General formula (8)



General formula (9)

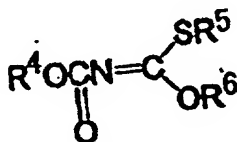


General formula (10)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom, and, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom.

13. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



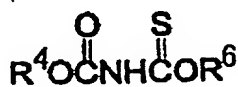
in which:  $\text{R}^4$  represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group;  $\text{R}^5$  represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group;

and  $R^6$  represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group, the method comprising the steps of:

preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and

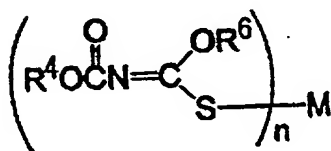
reacting the second intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



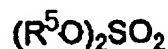
General formula (8)



General formula (9)



General formula (10) General formula (11)



General formula (12)

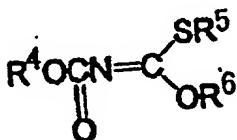
wherein, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X



represents a halogen atom or  $\text{SO}_3\text{Ar}$ , and Ar represents a substituted or non-substituted aryl group.

14. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which:  $\text{R}^4$  represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group;  $\text{R}^5$  represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and  $\text{R}^6$  represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group, the method comprising the steps of:

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate; and

reacting the second intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



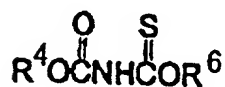
General formula (5)



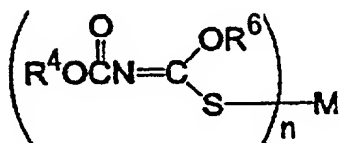
General formula (6)



General formula (7)



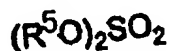
General formula (8)



General formula (10)



General formula (11)

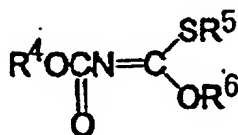


General formula (12)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom, in the general formula (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X represents a halogen atom or SO<sub>3</sub>Ar, and Ar represents a substituted or non-substituted aryl group.

15. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which: R<sup>4</sup> represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group; R<sup>5</sup> represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group, the method comprising the steps of:

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and

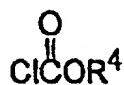
reacting the second intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



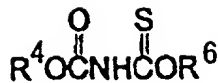
General formula (5)



General formula (6)



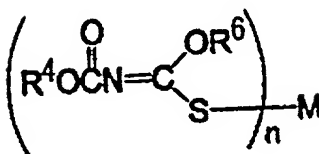
General formula (7)



General formula (8)



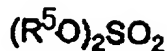
General formula (9)



General formula (10)



General formula (11)



General formula (12)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X represents a halogen atom or  $\text{SO}_3\text{Ar}$ , and Ar represents a substituted or non-substituted aryl group.

REMARKS

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,

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Washington, D.C. 20037-3213  
Telephone: (202) 293-7060  
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*Peter AMCK, Reg. No. 23,063*  
Darryl Mexic  
Registration No. 23,063

Date: February 14, 2002

2002 FEB 14 10 10 AM

## APPENDIX

### VERSION WITH MARKINGS TO SHOW CHANGES MADE

#### IN THE SPECIFICATION:

Amend the specification by inserting before the first line the sentence:

This is a divisional of Application No. 09/858,723 filed May 17, 2001; the disclosure of which is incorporated herein by reference.

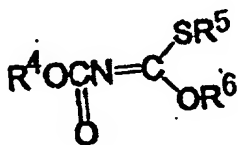
#### IN THE CLAIMS:

Claims 1-8 are canceled.

The claims are amended as follows:

9. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which: R<sup>4</sup> represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group; R<sup>5</sup> represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group~~the isothiocyanatoformic acid ester derivative~~  
according to claim 8, the method comprising the steps of:

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing an intermediate represented by the following general formula (8); and

preparing the isothiocyanatoformic acid ester derivative from the intermediate:



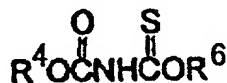
General formula (5)



General formula (6)



General formula (7)

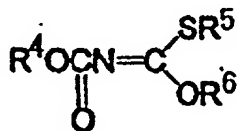


General formula (8)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom.

10. A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)

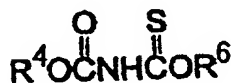


in which:  $R^4$  represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group;  $R^5$  represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and  $R^6$  represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group the isothiocyanatoformic acid ester derivative according to claim 8, the method comprising the steps of:

preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and

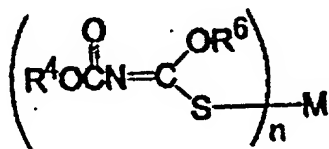
preparing the isothiocyanatoformic acid ester derivative from the second intermediate:



General formula (8)



General formula (9)



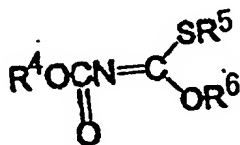
General formula (10)



wherein, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom.

11. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

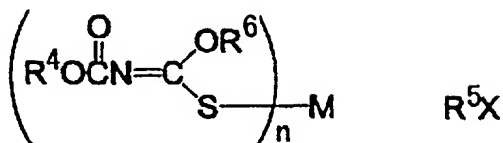
General formula (2)



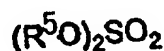
in which: R<sup>4</sup> represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group; R<sup>5</sup> represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group~~the isothiocyanatoformic acid ester derivative according to claim 8, the method comprising the steps of:~~

preparing an intermediate represented by the following general formula (10); and

reacting the intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



General formula (10) General formula (11)

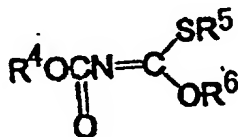


General formula (12)

wherein, in the general formula (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X represents a halogen atom or SO<sub>3</sub>Ar, and Ar represents a substituted or non-substituted aryl group.

12. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which: R<sup>4</sup> represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group; R<sup>5</sup> represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or

~~a substituted or non-substituted aryl group the isothiocyanatoformic acid ester derivative~~  
 according to claim 8, the method comprising the steps of:

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and preparing the isothiocyanatoformic acid ester derivative from the second intermediate:



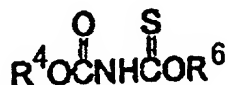
General formula (5)



General formula (6)



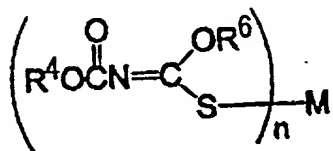
General formula (7)



General formula (8)



General formula (9)

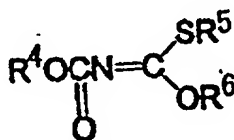


General formula (10)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom, and, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom.

13. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)

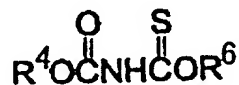


in which: R<sup>4</sup> represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group; R<sup>5</sup> represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and R<sup>6</sup> represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group~~the isothiocyanatoformic acid ester derivative according to claim 8, the method comprising the steps of:~~

preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and

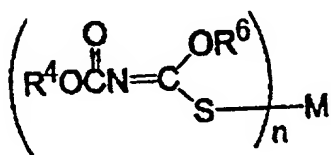
reacting the second intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



General formula (8)



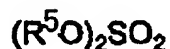
General formula (9)



General formula (10)



General formula (11)

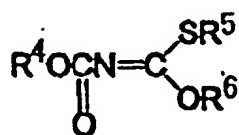


General formula (12)

wherein, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X represents a halogen atom or SO<sub>3</sub>Ar, and Ar represents a substituted or non-substituted aryl group.

14. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which:  $R^4$  represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group;  $R^5$  represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and  $R^6$  represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group; ~~the isothiocyanatoformic acid ester derivative according to claim 8,~~ the method comprising the steps of:

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate; and

reacting the second intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



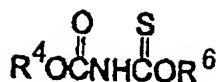
General formula (5)



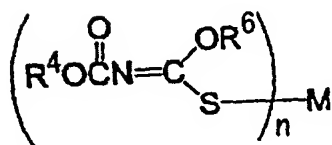
General formula (6)



General formula (7)



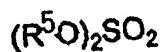
General formula (8)



General formula (10)



General formula (11)

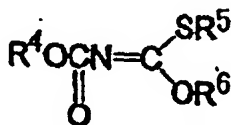


General formula (12)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom, in the general formula (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X represents a halogen atom or  $\text{SO}_3\text{Ar}$ , and Ar represents a substituted or non-substituted aryl group.

15. (Amended) A method of preparing an isothiocyanatoformic acid ester derivative represented by the following general formula (2):

General formula (2)



in which:  $R^4$  represents a substituted or non-substituted alkyl group, or a substituted or non-substituted aryl group;  $R^5$  represents a substituted or non-substituted alkyl group, a substituted or non-substituted aryl group, or a substituted or non-substituted heterocyclic group; and  $R^6$  represents a substituted or non-substituted alkyl group having at least 3 carbon atoms, or a substituted or non-substituted aryl group ~~the isothiocyanatoformic acid ester derivative according to claim 8, the method comprising the steps of:~~

adding a chloroformic acid derivative represented by the following general formula (7) to an isothiocyanic acid salt represented by the following general formula (5) and a hydroxy derivative represented by the following general formula (6) for preparing a first intermediate represented by the following general formula (8);

preparing a second intermediate represented by the following general formula (10) from the first intermediate and a compound represented by the following general formula (9); and

reacting the second intermediate with an alkylating agent represented by one of the following general formula (11) and the following general formula (12) for preparing the isothiocyanatoformic acid ester derivative:



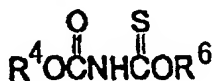
General formula (5)



General formula (6)



General formula (7)



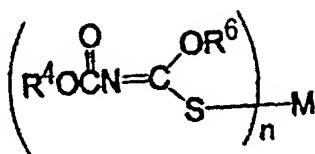
General formula (8)



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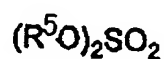
General formula (9)



General formula (10)



General formula (11)



General formula (12)

wherein, in the general formula (5), Z represents a sodium atom or a potassium atom, in the general formulas (9) and (10), M represents an alkali metal atom, an alkali earth metal atom, an aluminum atom or a magnesium atom, and, in the general formula (11), X represents a halogen atom or  $\text{SO}_3\text{Ar}$ , and Ar represents a substituted or non-substituted aryl group.